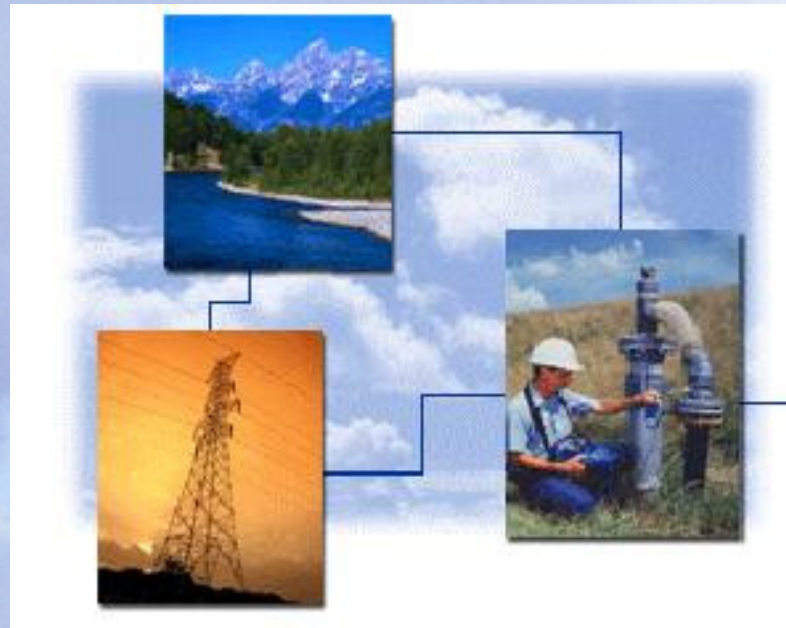


Landfill Gas Energy Potential in California



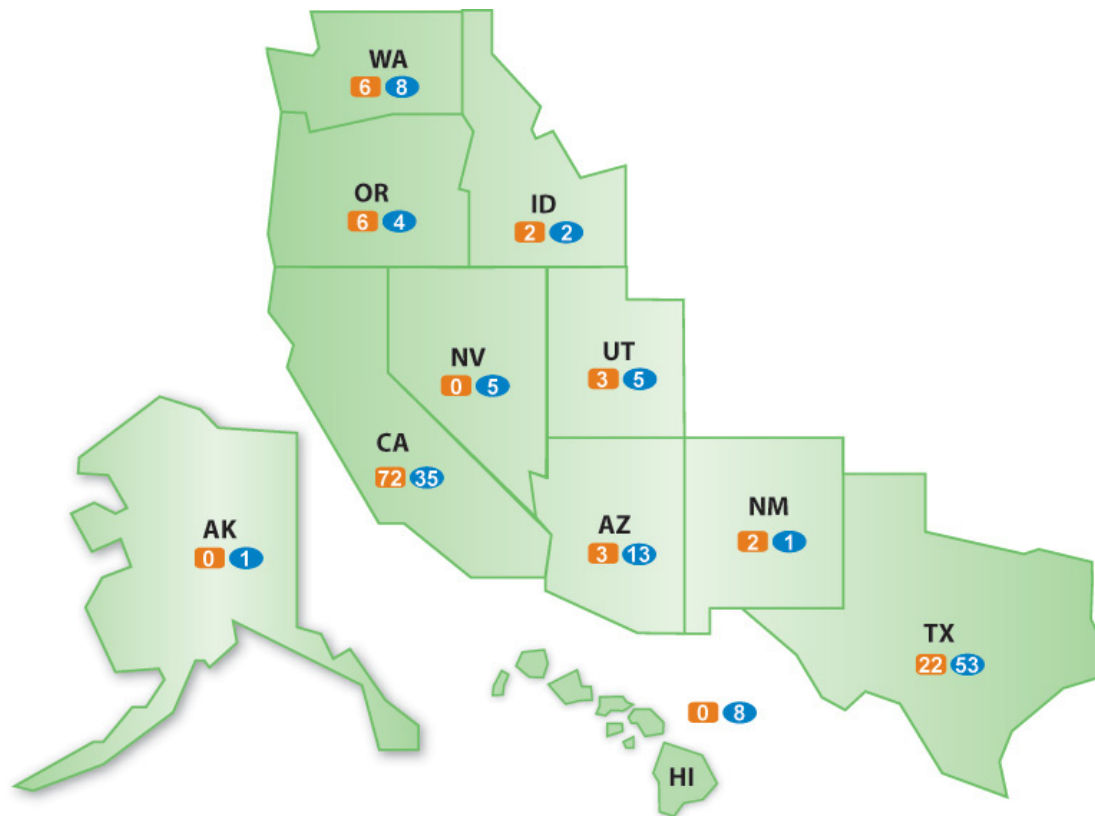
Presentation to California Energy Commission

**Tom Frankiewicz, Program Manager
U.S. Environmental Protection Agency
Landfill Methane Outreach Program (LMOP)**





Landfill Gas Energy Projects and Candidate Landfills



Territory 3 Summary

115 OPERATIONAL Projects
(402 MW and 39 mmscfd)

~ 135 CANDIDATE Landfills
(400 MW or 185 mmscfd,
4.5 MMTCE Potential)



OPERATIONAL PROJECTS



CANDIDATE LANDFILLS*

* Landfill is accepting waste or has been closed for 5 years or less and has at least 1 mmtons of waste and does not have an operational/under construction LFGE project; or is designated based on actual interest/planning.

These data are from LMOP's database as of December 22, 2008.
❖ LMOP does not have any information on candidate landfills in this state.

<http://www.epa.gov/lmop>



State of LFGE in California

- 323 Landfills in the State
- 73 Operational Projects
 - 67 Electricity Projects generating 274.7 MWs
 - 6 Direct Use Projects delivering 9.57 mmscfd
- 7 Under Construction Projects
 - 6 electricity, 36 MW potential
 - 1 direct use/alternate fuel, 1.24 mmscfd potential
- 35 Candidate Landfills
 - 118 MW potential
 - 619,400 tons of potential CO₂ emission reductions





Estimated 2009 Benefits from Candidate Sites in California

- Environmental:
 - Carbon sequestered annually by nearly 127,710 acres of pine or fir forests, or
 - CO2 emissions from more than 1,306,850 barrels of oil consumed, or
 - Annual greenhouse gas emissions from nearly 102,900 passenger vehicles, or
 - CO2 emissions from more than 63,785,400 gallons of gasoline.
- Energy:
 - Powering more than 69,000 homes and heating more than 155,000 homes





Regulations that Affect LFGE

- LFGE projects may be affected by a variety of federal, state, and local air quality regulations. Applicable federal Clean Air Act regulations include:
 - New Source Performance Standards (NSPS) / Emission Guidelines (EG)
 - Title V
 - Maximum Achievable Control Technology (MACT)
 - New Source Review (NSR)
 - Prevention of Significant Deterioration (PSD)





AIR QUALITY CONSIDERATIONS

- New Source Review (NSR)
- Title V Permits
- New Source Performance Standards (NSPS) /Emission Guidelines (EG)
- District Rules and Regulations
- Air Toxics/Maximum Achievable Control Technology (MACT) Standards





DISTRICT RULES & REGULATIONS

- **Source Specific Rules**
 - **District LFG rules**
 - **IC engine rules**
 - **Turbine rules**
 - **Boiler rules**
 - **BACT/LAER standards**
- **District NSR Rules**
 - **Offsets**
 - **Variable Policies**





California Renewable Energy Incentives for LFG

- Renewable Portfolio Standard (RPS)
 - Increase the % of renewable retail sales by at least 1% per year to reach 20% by end of 2010; goal of 33% by end of 2020
- California Feed-In Tariff
- Interconnection Standards
- Public Benefits Funds for Renewables & Efficiency





California Renewable Energy Incentives for LFG Regional

- Southern California Edison (SCE) – Biomass Standard Contract
- San Diego – Green Power Purchasing
- San Diego – Sustainable Building Policy





Barriers

- Interpretation of BACT/LAER for LFGE technologies
- Treatment of LFG combustion equipment on par with natural gas limits
- Availability and cost of emission offsets
- Cost and timing for utility interconnect
- No statewide approach to LFGE





Recommendations

- Assess landscape of regulations affecting LFGE and other renewable energy
- Coordinate with state and local regulatory agencies
- Encourage local air districts to honor existing offset exemptions in the California Health & Safety Code
- Seek partnerships
- Adoption of statewide policy on interconnect issues



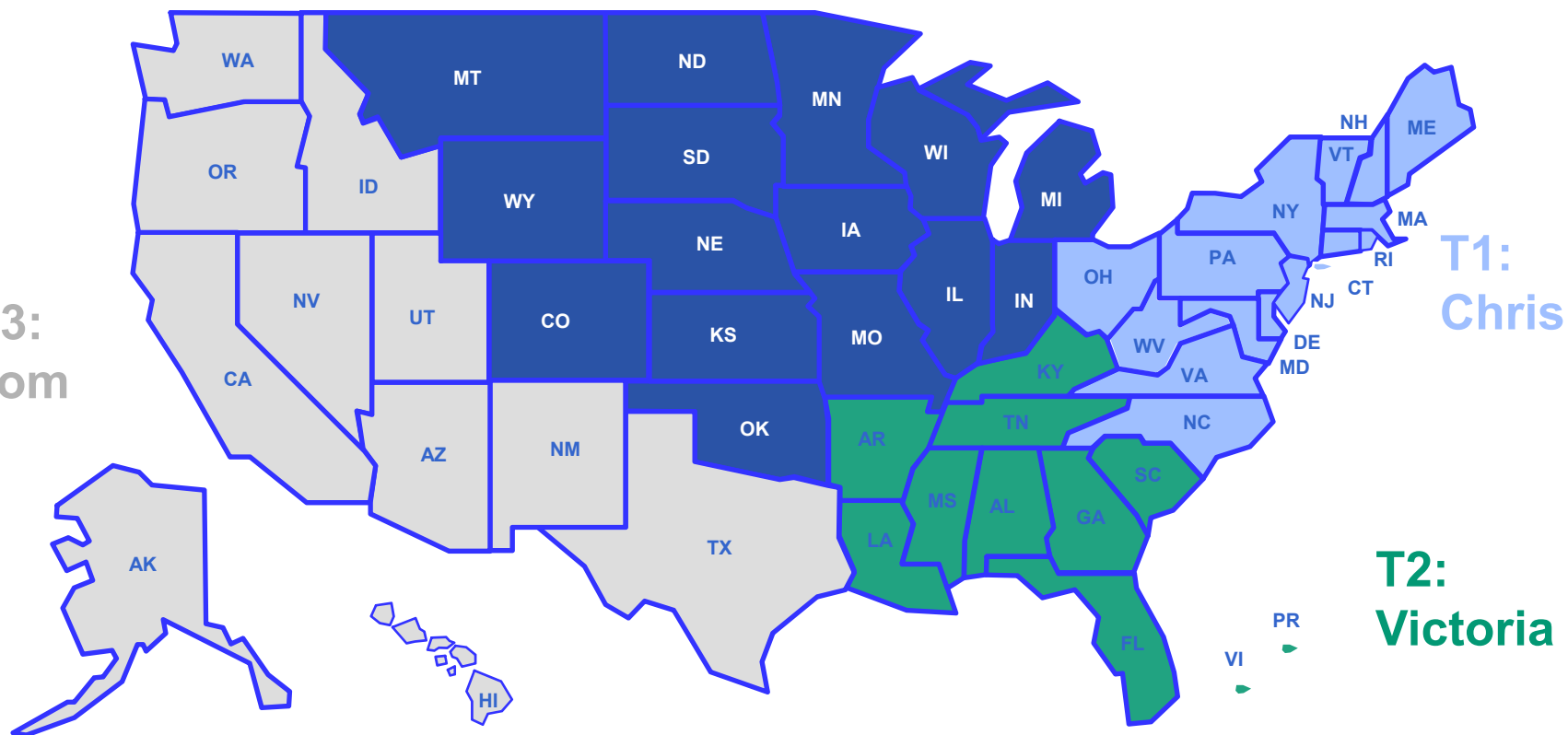


For More Information

[*www.epa.gov/lmop*](http://www.epa.gov/lmop)

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